Small Business Innovation Research/Small Business Tech Transfer

Multi-A.U. SOLAROSA Concentrator Solar Array for Space Science Missions, Phase II

Completed Technology Project (2014 - 2016)

Project Introduction

Deployable Space Systems, Inc. (DSS), in partnership with MOLLC will focus the proposed NASA Phase 2 effort on the development and demonstration of our innovative Multi-A.U. SOLAROSA technology. SOLAROSA, named for Stretched Optical Lens Architecture on Roll-Out Solar Array, is a new lightweight, high-performance space solar array that enables missions through low-cost, lightweight, compact stowage volume, radiation hardness, high voltage capability, scalability to ultra-high power, and LILT/HIHT environment operability. SOLAROSA is a fusion of the proven Stretched Lens Array (SLA) concentrator technology with DSS's innovative ultra-lightweight Roll-Out Solar Array deployable structural platform. The proposed Phase 2 program is specifically focused on technology development and demonstration of multi-A.U. operability, large beta axis off-pointing operational capability, and high radiation environmental survivability. The proposed Phase 2 program provides NASA/industry a near-term and low-risk solar array that provides revolutionary performance in terms of high specific power, affordability, lightweight, high deployed stiffness, high deployed strength, compact stowage volume, reliability, high radiation tolerance, high voltage operation capability, scalability, and LILT/HIHT operation capability. The predicted performance metrics for the SOLAROSA technology are incredible improvements over current state-of-the-art, and in many cases are mission-enabling for future NASA Space Science and Exploration missions, and particularly for NASA deep space solar electric propulsion (SEP) high-voltage and high radiation missions.

Primary U.S. Work Locations and Key Partners

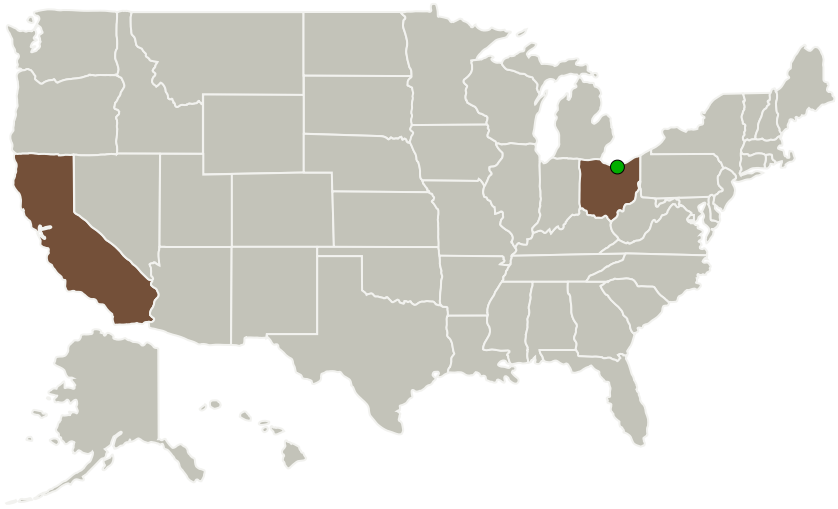

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Table of Contents

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Organizations Performing Work	Role	Type	Location
Deployable Space Systems, Inc(DSS)	Lead Organization	Industry	Goleta, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

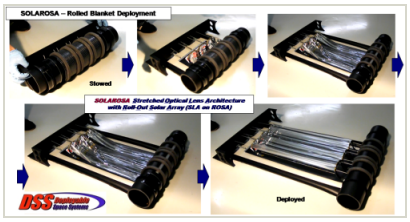
April 2014: Project Start

September 2016: Closed out

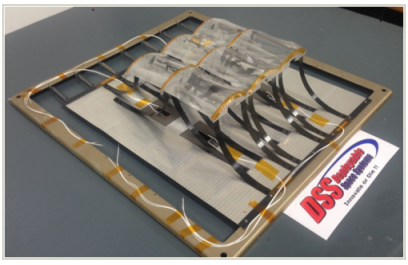
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137627)*

Images



Briefing Chart Image
Multi-A.U. SOLAROSA Concentrator Solar Array for Space Science Missions, Phase II *(https://techport.nasa.gov/image/134705)*



Final Summary Chart Image
Multi-A.U. SOLAROSA Concentrator Solar Array for Space Science Missions, Phase II Project Image *(https://techport.nasa.gov/image/135505)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Deployable Space Systems, Inc (DSS)

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Brian R Spence

Co-Investigator:
Brian Spence

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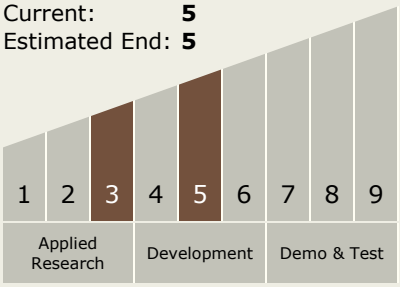
Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.1 Power Generation and Energy Conversion
    - TX03.1.1 Photovoltaic

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System